ABSTRACT

A sub-cavity with an integral steam heater is provided in a ceiling portion of a heating chamber. A gas in the heating chamber is sucked into a blower through a gas suction opening and sent into an external circulation path. The gas passing through the external circulation path sucks steam from a steam producing device by using steam suction ejector. The gas that took the steam in enters into the sub-cavity, as the gas return opening, from the external circulation path. The steam contained in the gas is heated by the steam heater in the sub-cavity to become an overheated state, spouted out downward from spouting holes in the bottom face of the sub-cavity, and collides with an object to be heated. The external circulation path is constructed from a pipe with a circular cross-section.